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February 7, 2008

Greg Bean, Senior Environmental Engineer
Weyerhaeuser
PO Box 188
Longview WA 98632-7117

RE: Proposed Best Available Retrofit Technology Report, for Longview, WA, December 2007

Dear Mr. Bean:

We have reviewed your company's proposed Best Available Retrofit Technology (BART) report prepared by CH2M Hill. I thank you for the timely submittal of this report.

Attachment 1 to this letter contains a number of comments and requests for additional information and analyses stemming from our review of the report. Most of the questions have to do with adequacy of explanations or missing information.

If you believe that some of the additional information requested is confidential business information, clearly state that it is such and include it on separate pages stating it is confidential business information.

Please submit your additional information to us by March 3, 2008.

If you have any questions about these comments and questions, do not hesitate to contact me at (360) 407-6810 or by e-mail at anew461@ecy.wa.gov.

Sincerely,

Alan R Newman

Alan R. Newman, P.E.
Senior Air Quality Engineer

Attachment

cc: Jay Willenberg, CH2M Hill, Bellevue, WA
Marc Crooks, Ecology Industrial Section

Attachment

1. Section 2. Emission Units and Emissions The title of this section would indicate that information about the design and operating criteria of the 3 BART eligible emission units would be found here. Similarly the actual 24-hour maximum emissions used for the baseline visibility impact modeling would be listed. The basic design criteria information is necessary to compare to the unit RACT/BACT/LAER database information provided in appendix A and to evaluate the applicability of the control technologies proposed.

   The unit design information should include information about the design and operation of each unit and its currently installed emission controls. Information would include unit throughput capacity (tons BLS/day, MMBtu/hr heat input), fuels used and average percentages of each fuel by weight or heat content, basic design (spreader stoker, pile burner, suspension burner, etc), emission controls in place, and control efficiencies/emission rates of those controls, and other appropriate design and operational information. This information provides the basis for the evaluations in the rest of the report. Please provide this information in a single location of the report, such as this Section or tables in the Appendix.

2. In several places in the report various emission rates are presented. We are unable to substantiate the basis for the Recovery Furnace SO_2 emissions used for modeling. Based on annual SO_2 emissions reported to us by your company, the maximum day 24 hour emission rate should be considerably higher than 2 pounds per hour reported for the maximum day over the 3 baseline years. For example the 2005 emission inventory data you reported to us indicates an emission rate of 50 tons/year, a remarkably low number considering the design black liquor throughput. Assuming you operated the recovery furnace for 50 weeks per year, this would result in an annual average hourly SO_2 emission rate of over 11 lb/hour, considerably higher than the rate reported in this report. Not having the model input and other files it is impossible to determine of the Recovery Furnace SO_2 emissions in the report differ from what was modeled.

   This apparent error for the SO_2 emissions brings into question the accuracy of the determination of all of the highest 24 hour emissions used for visibility impacts modeling.

3. In the second full paragraph on page 15, reference is made to a Figure 1, showing the current configuration of the power boiler ESP and stack. This figure is missing from our package. Many of the following comments could be reduced or eliminated by including appropriate scale drawings of the recovery furnace and the power boiler configurations.

4. No. 10 Recovery furnace, NOx control evaluation, page 8. In Step 1, you note that the staged combustion is already practiced in the recovery boiler. What level of staged combustion is currently utilized in the furnace – secondary, tertiary, or quaternary staging? Are there opportunities to 'fine tune' the staged combustion to further reduce the NOx production? Please discuss the possibility of further NOx reductions through improvements to the existing staged combustion system.

Is SNCR or SCR available to use on recovery furnaces? If not, what are the reasons that prevent their use? If either of these technologies is available for use, what is the technical and economic feasibility to install on this recovery furnace?

A statement in the report indicates that alkali contamination of the SCR catalyst will deactivate it. How fast does this deactivation occur? Can the contamination be removed by routine washing of the catalyst?

5. Table 4 on Page 11. We are confused as to what this information represents. It appears to be the emissions recorded after the 2006(?) boiler upgrade project. Is this true? Do the maximum emission rates in the table represent the high 24 hour values or peak hourly values, or the average hourly value on the day with the highest 24 hour emissions? This is useful information to know for evaluating additional emission controls, but is not used for this purpose. I note the emission rates actually stated to have been modeled in Table 7 (page 23) are repeated in Table 3 instead. Also it is not clear that the modeled emission rate for particulates from the No. 11 Power Boiler is based on the currently permitted or baseline actual emission rate achieved by the currently installed PM emission control. Please clarify this.

6. No. 11 Power Boiler, SO_2 control evaluation, Page 12 and 14. On these pages, you note that the coal used in this boiler is a low sulfur western coal. What is the type and source (mine or region) of the coal and what is its average/nominal sulfur content? Is a lower sulfur coal available for use that could be substituted? How much sludge if fired in the boiler annually? What is the sulfur content of the sludge fired? Is it possible to reduce the sulfur in the sludge prior to combusting it?

7. No. 11 Power Boiler, SO_2 control evaluation, Page 11. Did the dry sorbent injection system go through a BACT review? If so, please provide the reference information for that BACT report. What is the design and actual SO_2 removal for the Trona dry sorbent system? Why is Trona used instead of hydrated lime for SO_2 control from this boiler?

8. No. 11 Power Boiler, SO_2 control evaluation, Page 14. Are there characteristics of the sludge that can be modified to reduce the sulfur content of the sludge? What is the water content of the sludge as currently fired? Could the sludge be further dewatered before being introduced to the boiler, resulting in less coal and wood fuel needed to dry the sludge in the boiler?

9. No. 11 Power Boiler, SO_2 control evaluation, Page 14 - 16. You need to include a discussion of optimizing the effectiveness of the current dry sorbent injection system, including the use of a different chemical in the dry sorbent injection system. Would use of hydrated lime increase SO_2 removal compared to the use of Trona?

10. No. 11 Power Boiler, NOx control evaluation, Page 16. What are the pertinent design characteristics of this boiler that affect NOx production? Questions that come to mind include:

    a. Is staged combustion already used to optimize combustion and reduce NOx? If so, describe the existing staged combustion?

b. How do the different fuels (principally coal, wood and sludge) enter the boiler, mixed together or from separate entry points?
c. Are there opportunities to reduce NOx through changes to how the various fuels are introduced to the boiler? i.e. could wet sludge be introduced mixed with the coal to help reduce peak flame temperatures?
d. How much of the NOx is fuel NOx and how much is thermal NOx?

11. No. 11 Power Boiler, NOx control evaluation, Page 17. The discussion on the use of SCR on this power boiler is not convincing that SCR is not technically feasible. The technology is being applied and used successfully on coal fired power plants. A common location is classed as hot-side/dirty – the SCR bed is located before the economizer, SO_2 control, and the particulate control device. Based on your boiler description on this page, this appears to be a viable location to install SCR control for this boiler. The level of control achievable by an SCR system installed could be optimized to what can reasonably be achieved in the space available for an SCR catalyst bed.

12. No. 11 Power Boiler, NOx control evaluation, Page 17. The discussion on the use of SNCR is not convincing that the technology is not feasible for installation on this boiler. In Washington this technology is used at Kimberley-Clarke in Everett, apparently successfully after problems with an ammonium chloride plume was corrected. A recent review of reports about the use of SNCR on dry process cement plants with higher SO_2 emission rates indicates no sulfate plume is generated. A chloride plume can be traced to using salty hog fuel. Is there a method that Weyerhaeuser can assure that the hog fuel either is not 'salty' or 'salty hog fuel' and 'non-salty' fuel is mixed to assure a low salt, non-problematic salt content?

13. No. 11 Power Boiler, NOx control evaluation, Page 19. In the sentence discussing Step 3, does the 35 to 50% NOx reduction apply to only natural gas reburning, only to over fire/staged combustion, or to the combination of reburning and overfire air/staged combustion? Since neither NOx reduction technique is discussed until Step 4, this sentence is unclear and the whole process description needs to be expanded for clarity.

14. No. 11 Power Boiler, NOx control evaluation, Page 19. In the step 4 discussion, natural gas reburning is 'estimated to exceed $10,000 per ton of NOx reduced". What are the significant elements of the estimated control cost? Please provide the estimate for review.

    Was the over fire air and staged combustion analysis submitted as part of a BACT analysis for the recent boiler capacity upgrade? Is so, what parts of the Notice of Construction package discuss this analysis and the effects of implementing it? If the analysis was not part of the Notice of Construction package, please supply a copy of the analysis showing the pre change condition and expected improvements resulting from the changes made.

15. Table 6, page 23. We note that the stack base elevation shown is 17 -18 feet for all stacks. According to the BART modeling protocol, the modeled terrain elevation should be used, not an actual elevation. The BART modeling terrain elevation at the plant site is 99 meters. If there is a need to remodel the impacts from the facility, the 99 meter site elevation must be

used. One reason to remodel the impacts would be to reflect corrections to the apparent error in the recovery furnace maximum 24 hour SO_2 emission rate.

16. As information to support our regional haze SIP, we need to have a copy of the following modeling information:

    a. Input files used for Calpuff, Calpost and, if used, POSTUTILS.
    b. The output (*.lst) files from Calpuff and Calpost.
    c. A spreadsheet with ranked delta dVs at each Class I area. The spreadsheet needs to include at a minimum, the 8th highest values for each year, and the 22nd highest for all 3 years.
    d. The species contribution to delta dV on the above mentioned 8^{th} highest days per Class I area per year, and 22^{nd} highest days over the 3 year period for each Class I area.

    Data for (c) and (d) are available in the Calpost output files. The information can be supplied on CD's or a DVD.

17. We want a copy of the BART analysis (and any updates or modifications resulting form the above comments) in electronic form for posting on our web site and to ease distribution to non-Ecology reviewers.